Patent claims

1. A method for monitoring the particle concentration in a gas stream (24), in particular of soot particles in the exhaust gas stream of an internal combustion engine, in which

- a sensor (4) which collects particles (28) is placed in the gas stream (24),
- the sensor (4) is integrated as a capacitive element (32) into an electromagnetic resonant circuit (31),
- the resonant circuit (31) is excited with an alternating voltage (42),
- a characteristic variable of the resonant circuit which can vary as a result of the particle load of the sensor (4) is determined as a reference value when the sensor is not loaded,
- the change in the characteristic variable which is brought about by the particle load compared to the reference value is determined.

2. The method as claimed in claim 1, in which the resonant circuit (31) is excited with an alternating voltage (42) with a fixed frequency and fixed amplitude and the voltage dropping across the sensor (4) is determined as a characteristic variable.

3. The method as claimed in claim 1, in which the resonant frequency of the resonant circuit (31) is determined as a characteristic variable.

4. The method as claimed in claim 3, in which the frequency of the alternating voltage (42) exciting the resonant circuit (31) is tuned to its respective resonant frequency, and the frequency of the exciting voltage (42) is determined as a characteristic variable.

5. The method as claimed in one of the preceding claims, in which, during the determination of the characteristic variable, the sensor (4) is heated to a temperature below the ignition temperature of the particles (28) in order to remove impurities adhering to said sensor (4).

6. The method as claimed in one of the preceding claims, in which, before the characteristic variable is determined, the sensor (4) is heated to a temperature above the ignition temperature of the particles (28) in order to remove a particle load.

7. A device for carrying out the method as claimed in one of claims 1 to 6, having a sensor (4) which is placed in the exhaust gas stream (24), is integrated as a capacitive element (32) into an electromagnetic resonant circuit (31) which is excited with alternating voltage (32), and collects particles (28), said sensor (4) having a nonconductive base body (12) and two electrodes (14a, b) which are mounted spaced apart from one another.

8. The device as claimed in claim 7, in which the base body (12) is composed of ceramic.

9. The device as claimed in claim 7 or 8, in which the base body (12) is composed of porous material.

10. The device as claimed in one of claims 7 to 9, in which the electrodes (14a, b) are embedded in the base body (12).

11. The device as claimed in one of claims 7 to 10, in which the electrodes (14a, b) are arranged on a side (26) of the base body (12) which is inaccessible to particles (28).

12. The device as claimed in one of claims 7 to 11, having a heating device (52) for the sensor (4).

13. The device as claimed in one of claims 7 to 12, in which the base body (12) is provided with a catalytically active layer.